Excitation Functions of Fission Cross Sections for ^{11}C + ^{197}Au, ^{194}Pt, ^{196}Pt, and ^{198}Pt.

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A series of fission cross sections were measured following the fusion of the radioactive nuclear beam ^{11}C with several heavy targets (^{197}Au, ^{194}Pt, ^{196}Pt and ^{198}Pt) over a range of bombarding energies near the Coulomb barrier. The ^{11}C beam was the first sustained beam of this type ever created at these energies. Intensities as high as 10^8 ions/second were delivered by the BEARS facility at the 88" Cyclotron [1,2]. The fission cross sections were measured by coincident detection of fission fragments in two parallel plate avalanche counters. The beam energy was varied between 55 and 120 MeV, and several comparison measurements were made with stable beams of ^{11}B, ^{12}C and ^{13}C.

An example of the excitation functions that result from these cross section measurements is shown below as a function of the excitation energy (Fig. 1) and as a function of bombarding energy (Fig. 2) for the compound nucleus ^{207}Po formed using two different entrance channels.

The analysis of these data is continuing, and the results will be compared to statistical model calculations in and effort to quantify the effects of the proton-rich ^{11}C projectile on fusion-fission cross sections.

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[1] J. Powell *et al.*, Proceedings of the 15th International Conference on the Applications of Accelerators in Research and Industry, **CP475**, 318 (1999).

[2] J. Powell *et al.*, submitted to Nucl. Instr. & Meth.

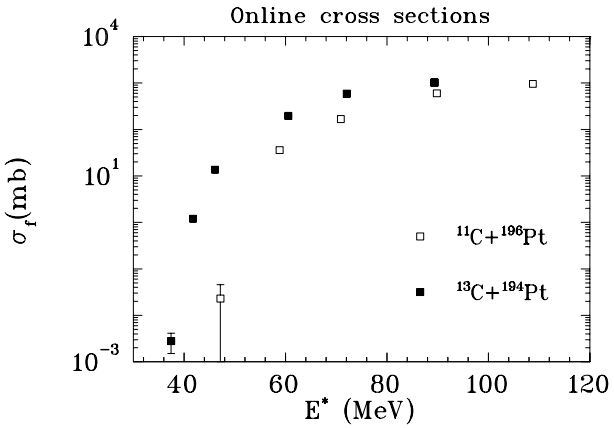

FIG. 1. The fission cross section is plotted as a function of the excitation energy for two different entrance channels making the same compound nucleus, ^{207}Po.

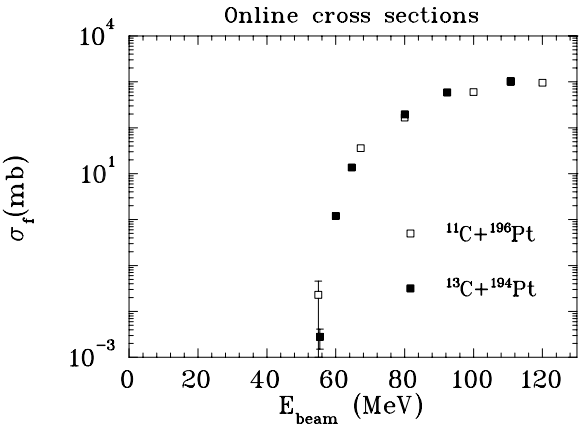

FIG. 2. The fission cross section is plotted as a function of the bombarding energy for two different entrance channels making the same compound nucleus, ^{207}Po.